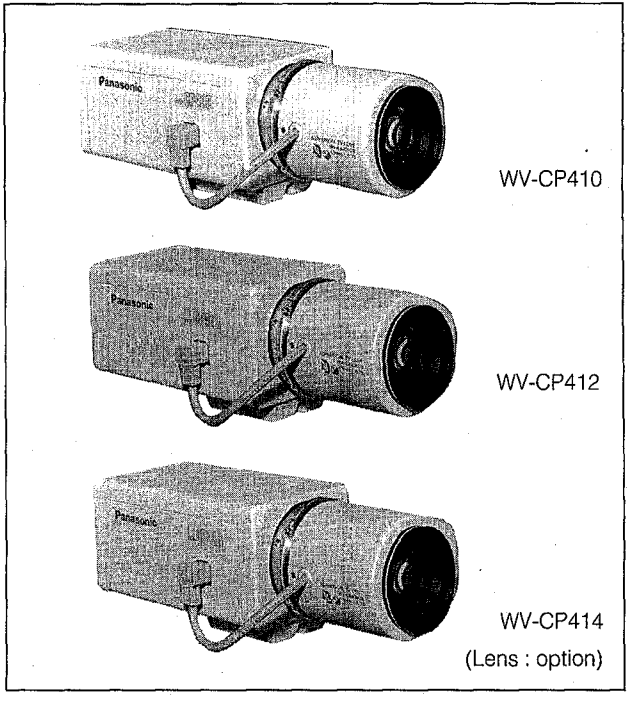
ENGLISH

Colour CCTV Cameras

WV-CP410/WV-CP412/WV-CP414

Operating Instructions



Panasonic

Before attempting to connect or operate this product, please read these instructions completely.

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ENGLISH VERSION

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION:
TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK), NO USER SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lighthing flash with arrowhead symbol, within an equilateral triangle, is interned to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accom-panying the appliance.

For U.K.

FOR YOUR SAFETY PLEASE READ THE FOLLOWING TEXT CAREFULLY.
This appliance is supplied with a moulded three pin mains plug for your safety and convenience.
A 13 amp fuse is fitted in this plug.
Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 13 amp and that it is approved by ASTA or BSI to BS1362.
Check for the ASTA mark or the BSI mark on the body of the fuse.
If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.
If you lose the fuse cover the plug must not be used until a replacement cover is obtained.
A replacement fuse cover can be purchased from your local Panasonic Dealer.

IF THE FITTED MOULDED PLUG IS UNSUITABLE FOR THE SOCKET OUTLET IN YOUR HOME THEN THE FUSE SHOULD BE REMOVED AND THE PLUG CUT OFF AND DISPOSED OF SAFELY.
THERE IS A DANGER OF SEVERE ELECTRICAL SHOCK IF THE CUT OFF PLUG IS INSERTED INTO ANY 13 AMP SOCKET.

If a new plug is to be fitted please observe the wiring code as shown below.
If in any doubt please consult a qualified electrician.
WARNING: This apparatus must be earthed.

The serial number of this product may be found on the bottom of the unit.
You should note the serial number of this unit in the space provided and retain this book as a permanent record of your purchase to aid identification in the event of theft.

Model No. _____

Serial No. _____

WARNING:
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

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For U.K.

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code.

Green-and-yellow:	Earth
Blue:	Neutral
Brown:	Live

As the colours of the wire in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows.

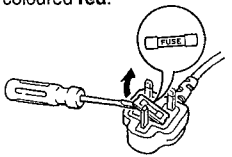
The wire which is coloured **green-and-yellow** must be connected to the terminal in the plug which is marked with the letter E or by the earth symbol ⏚ or coloured **green** or **green-and-yellow**.

The wire which is coloured **blue** must be connected to the terminal in the plug which is marked with the letter N or coloured **black**.

The wire which is coloured **brown** must be connected to the terminal in the plug which is marked with the letter L or coloured **red**.

How to replace the fuse

Open the fuse compartment with a screwdriver and replace the fuse and fuse cover.



For Australia

THIS APPARATUS MUST BE EARTHED.

To ensure safe operation the three-pin plug supplied must be inserted only into a standard three-pin power point which is effectively earthed through the normal household wiring. Extension cords used with the equipment must be three-core and be correctly wired to provide connection to earth. Wrongly wired extension cords are a major cause of fatalities.

The fact that the equipment operates satisfactorily does not imply that the power point is earthed and that the installation is completely safe. For your safety, if in any doubt about the effective earthing of the power point, consult a qualified electrician.

This model conforms of the EC directive (for radio interference) 87/308/EEC.

This apparatus was produced to BS 800:1987.

Cet appareil est conforme aux prescriptions de la directive 87/308/C.E.E. (concernant les interférences radio).

Dit modelis onderworpen aan de EEG-richtlijn (ter voorkoming van radio-interferentie) 87/308/EGG.

Denne model opfylder EF direktiv 87/308/EF (for forebyggelse af radiointerferens).

Este modelo cumple con la norma EC (para interferencias de radio 87/308/EEC).

La Società PANASONIC ITALIA S.p.A., importatrice di questo prodotto, dichiara che questo apparecchio è conforme alle disposizioni della direttiva C.E.E./87/308 (D.M. 13 aprile 1989).

PREFACE

Panasonic's WV-CP410 series Colour CCTV Cameras introduce a new line of cost effective colour cameras through the use of a 1/3 inch interline transfer CCD.
Minimum illumination of 0.09 footcandle (0.9 lux) at F0.75 (Equivalent to 0.2 footcandle (2 lux) at F1.2 or 0.3 footcandle (3 lux) at F1.4) is achieved by the use of on-chip micro lenses and aspherical high speed lenses.
In addition, it is possible to shoot indoor scenes with a fixed iris lens by use of the Electronic Light Control (ELC) function.
High performance-to-cost ratio is achieved through the extensive use of digital LSI`s.

FEATURES

- Extensive use of digital signal processing.
- Minimum illumination of 0.09 footcandle (0.9 lux) at F0.75 [equivalent 0.2 footcandle (2 lux) at F1.2 or 0.3 footcandle (3 lux) at F1.4] and signal-to-noise ratio of 50 dB is realized by employing a high sensitivity image sensor with micro lenses and low noise circuit design. This allows shooting under 0.9 lux by using Panasonic aspherical high speed lens.
- 480 lines of horizontal resolution and high quality picture by utilizing digital processing LSI's and employing a 752 horizontal pixel CCD image sensor.
  High resolution :
  Total pixels : 440,000 pixels
  Horizontal resolution : 480 lines
  High quality picture :
  (a) 2H type vertical detail enhancer for greater picture sharpness.
  (b) Digitalized processing circuits for high quality picture and a newly developed Auto Tracing White Balance (ATW) function.
  (c) Removal of aliasing of fine objects
  (d) Improvement of dynamic range by use of knee circuit
- Ability to shoot indoor scene with a fixed iris lens by use of the Electronic Light Control(ELC) function.
- Backlight compensation for use against unusual lighting conditions.

PRECAUTIONS

1. **Do not attempt to disassemble the camera.**
   To prevent electric shock, do not remove screws or cover.
   There are no user-serviceable parts inside.
   Refer servicing to qualified service personnel.

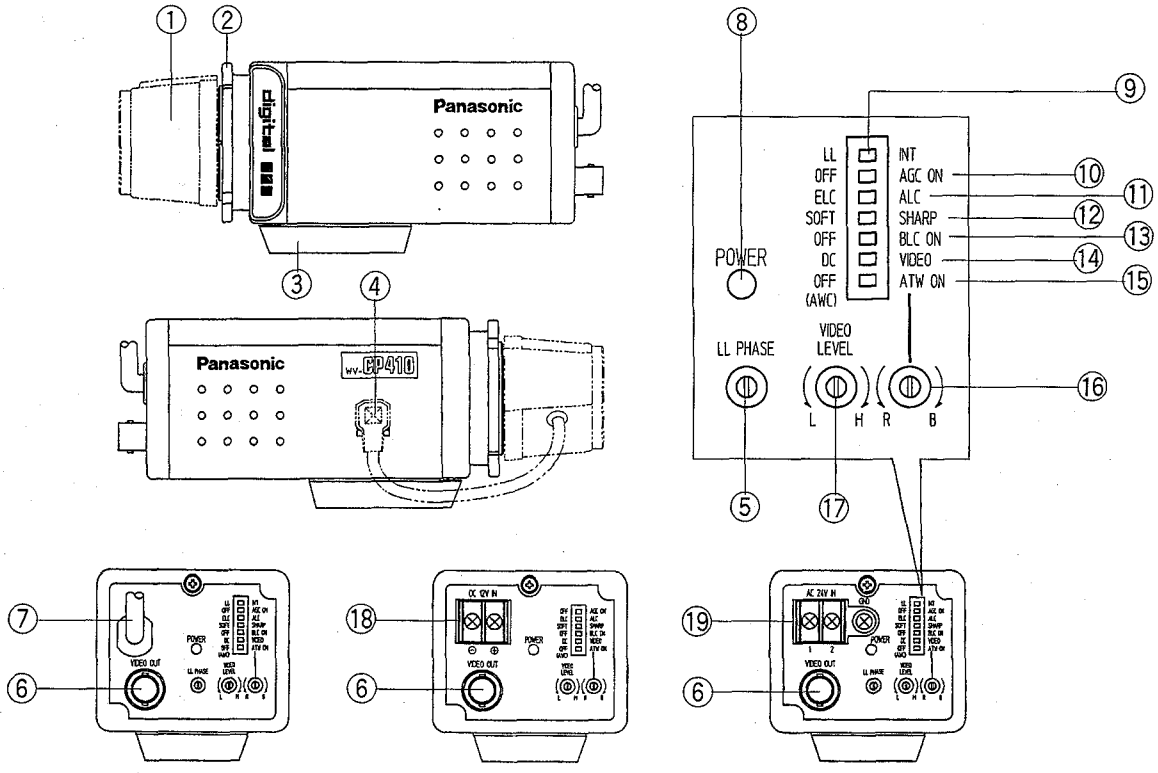
2. **Handle the camera with care.**
   Do not abuse the camera. Avoid striking or shaking it.
   The camera could be damaged by improper handling or storage.

3. **Do not expose the camera to rain or moisture, or try to not operate it in wet areas.**
   Do take immediate action if ever the camera does become wet. Turn the power off and refer servicing to qualified service personnel. Moisture can damage the camera and can also create the danger of electric shock.

4. **Never face the camera towards the sun.**
   Whether the camera is in use or not, never face it towards the sun. Do use caution when operating the camera in the vicinity of spot lights or other bright lights and light reflecting objects.

5. **Do not operate the camera beyond its temperature, humidity or power source ratings.**
   Do not use the camera in an extreme environment where high temperature or high humidity exist. Use the camera under conditions where the temperature is within –10°C - +50°C, and the humidity is below 90%. The input power source is 220 - 240V AC 50 Hz for WV-CP410, 12V DC for WV-CP412 or 24V AC 50 Hz for WV-CP414.

MAJOR OPERATING CONTROLS AND THEIR FUNCTIONS



(1) Lens (Option)

See pages 12, 13, 14, 15 and 16 for details on lens selection.

(2) Flange-back Adjusting Ring

This ring is used to adjust the back focal length or picture focus by rotating this ring to clockwise for C-mount lens or counterclockwise for special C-mount (CS mount) lens.

Cautions:

1. Always set this ring to fully clockwise before mounting the lens.
2. Do not turn this ring too much to counterclockwise when the C-mount lens is mounted as this could damage the inner glass and CCD image sensor.

(3) Camera Mounting Screw Hole

This threaded hole (1/4" - 20) is used to mount the camera onto a mounting bracket or tripod.

(4) Auto Iris Lens Connector

This 4-pin connector supplies the power and DC control signal to the auto iris lens.

(5) Line-lock Phase Control (LL PHASE)

This is used to adjust the phase of the video output signal when the camera is used in the Line-lock mode.

The adjusting range is approx. 1 field.

Refer to LINE-LOCK PHASE ADJUSTMENT on page 22 for details.

(6) Video Output Connector (VIDEO OUT)

This connector is used to connect a coaxial cable to the VIDEO INPUT of the specified monitor. In case of the WV-CP412, this connector may be connected to the CAMERA INPUT of the camera drive unit. The camera drive unit supplies DC power and vertical drive pulses, and video output from the camera.

(7) AC Power Cord

(8) Power Indicator (POWER)

(9) Sync Selection Switch (LL/INT) (WV-CP410/ WV-CP414)

This switch is used to select the camera synchronization mode.

INT: The camera synchronization mode is set to internal 2 : 1 interlace.

LL: The camera synchronization mode is set to Line-lock.

(10) AGC ON/OFF Switch (AGC, ON/OFF)

This switch is used to select the gain of the video amplifier as follows.

ON: When the lens iris is fully opened under a low light condition, a clear picture is obtained by automatic increase of the gain.

OFF: A natural and low-noise picture is obtained under a low light condition.

(11) Electronic Light Control/Automatic Light Control Selection Switch (ELC / ALC)

This switch is used to select the light control function, depending on lens type, as follows.

ALC: Choose this position when using an auto iris lens.

ELC: Choose this position when using a fixed or manual iris lens.

(12) Detail level Selection Switch (SOFT/SHARP)

The detail/aperture level can be selected by this switch.

Set the switch to the desired position while observing the picture on the monitor.

Note: Usually set this switch to the SHARP position. When a Quad System is connected to this camera, set this switch to the SOFT position.

(13) Backlight Compensation On/Off Switch (BLC ON/OFF)

When backlight affects the picture, set this switch to the "BLC ON" position for a clear picture.

(14) Lens Selection Switch (VIDEO/DC)

This switch is used to select the type of auto iris control signal to be supplied to the lens from the Auto Iris Lens Connector.

DC: Choose this position when an auto iris lens that requires a DC control signal is mounted on the camera. See pages 12, 13, 14, 15 and 16 for a list of these lenses.

VIDEO: Choose this position when an auto iris lens that requires a video control signal is mounted in the camera.

Examples of this type of lens includes WV-LA8B, WV-LA16B, WV-LA25B and the WV-LA50B.

(15) Automatic Tracing White Balance Control ON/OFF Switch (ATW, ON/OFF)

The white balance setting function can be selected as follows:

ON: The white balance is automatically and continuously set by detecting the characteristic/colour temperature of the light source through the lens and by controlling the gain of red and blue signals even if the characteristic/colour temperature varies.

OFF: The white balance is automatically set once and saved by detecting the characteristic/colour temperature of the light source through the lens and by controlling the gain of red and blue signals.

(16) ATW Control (ATW ON, R/B)

This control adjusts the level of red and blue colour balance when the ATW ON/OFF Switch (15) is set to the ON position.

It is preset at the centre position which usually provides accurate colour reproduction.

(17) Video level Control (VIDEO LEVEL, L/H)

This control adjusts the level of auto iris control when the selection switch (11) is set to the ALC position, or the level of electronic light control when the selection switch (11) is set to the ELC position.

Note; Adjust this control after setting the AGC ON/OFF Switch (10) to the OFF position.

(18) DC 12V In Terminal (DC 12V IN)

This terminal accepts 12V DC power source (10.5V - 16V)

(19) AC 24V In Terminal (AC 24V IN)

This terminal accepts 24V AC power source (19.5V - 28V).

Be sure to connect the grounding lead to the GND terminal.

NEW FUNCTIONS

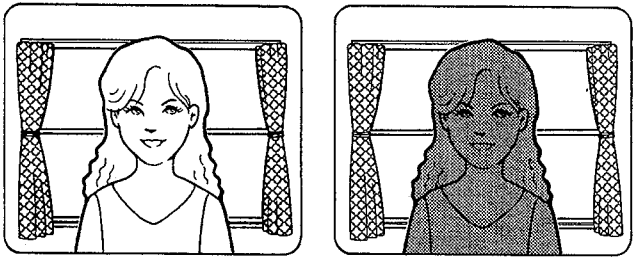
1. ELC (Electronic Light Control)

In this mode a continuously variable electronic shutter is employed to automatically control exposure times in the CCD Image Sensor, according to the incoming light level. When this mode is selected, a fixed or manual iris lens can be used instead of an ALC type lens.

1. Under bright conditions, such as outdoors, use an ALC type lens as the ELC control range is not wide enough under these conditions.
2. Under certain unique lighting conditions, the following may appear;
   - strong smear and/or blooming on high light objects such as spot lights or windows.
   - noticeable flicker in the picture and/or colour rendition variations.
   - periodic variance of white balance

   Should these phenomena occur, use an ALC lens.
3. When using this camera in the ELC mode with a fixed iris lens, the depth of field of the image may be less than that obtained by using an ALC lens. Depth of field varies inversely with the iris opening. Thus, using this camera in the ELC mode with the lens iris fixed fully opened will result in less depth of field than if an ALC lens was used. (And distant objects in the picture might not be in focus.)

2. BLC (Back Light Compensation)



ON OFF

When strong, unwanted background lighting interferes with the clarity of important centre-of-scene objects, turn this switch to the "ON" position.

Cautions :

1. It is recommended to set this switch to the "BLC OFF" position when using this camera with a pan/tilt head or if the scene object haves a rapid change in illumination, since the speed of lens iris becomes slow in the "BLC ON" position.
2. If the desired objects are not in the centre of the picture, backlight compensation may not work effectively.

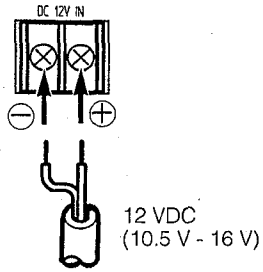
CONNECTIONS

A. WV-CP410

1. Connect the AC Power Cord (7) to a electrical outlet of 220 - 240V AC 50 Hz.

B. WV-CP412

1. A 12V DC power supply is required.
2. Connect the power cable to the DC 12V In Terminal (18) on the rear panel of the camera.



Resistance of copper wire [at 68°F (20°C)]

Copper wire size (AWG)	#24 (0.22mm²)	#22 (0.33mm²)	#20 (0.52mm²)	#18 (0.83mm²)
Resistance ohms/ft	0.257	0.165	0.099	0.059
Resistance ohms/m	0.078	0.050	0.030	0.018

- Calculation method of maximum cable length between camera and power supply.

$10.5V\ DC \leq V_A - (R \times 0.42 \times L) \leq 16V\ DC$

L : Cable length (meter)

R : Resistance of copper wire (ohms/meter)

V_A : DC output voltage of power supply unit

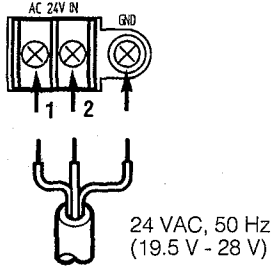
$$L\ standard = \frac{V_A - 12}{0.42 \times R}\ (meter)$$

$$L\ minimum = \frac{V_A - 16}{0.42 \times R}\ (meter)$$

$$L\ maximum = \frac{V_A - 10.5}{0.42 \times R}\ (meter)$$

C. WV-CP414

1. A power supply of 24V AC 50Hz is required.
2. Connect the power cable to the AC 24V In Terminal (19) on the rear panel of the camera.

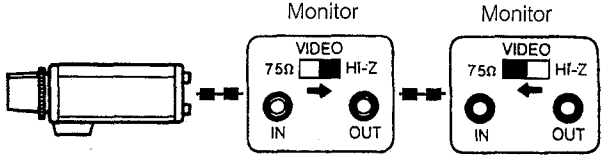


Recommended wire gauge sizes for 24V AC line.

Copper wire size (AWG)		#24 (0.22mm²)	#22 (0.33mm²)	#20 (0.52mm²)	#18 (0.83mm²)
Length of Cable (Approx.)	(ft)	314	495	842	1403
	(m)	95	150	255	425

Video Cable

1. It is recommended to use a video monitor whose resolution is at least equal to the camera's resolution..
2. Terminate the camera output with 75-ohm resistor at the furthest end of its cable run.
   A. Use 75-ohm coaxial cable.
   B. Always set the last monitor's termination switch to 75 ohms, and set the termination switches of intermediate monitors to HIGH (Hi-Z) position.



   C. The maximum extensible coaxial cable length between the camera and the monitor is shown in the table 1. Since cable quality varies among manufactures, please verify video quality before final installation, if maximum lengths are to be used.

Table 1

Type of coaxial cable		RG-59/U (3C-2V)	RG-6U (5C-2V)	RG-11/U (7C-2V)	RG-15/U (10C-2V)
Recommended maximum cable length	(ft)	825	1,650	1,980	2,640
	(m)	250	500	600	800

3. Wiring precautions:

- Do not bend coaxial cable into a curve whose radius is smaller than 10 times the cables diameter.
- Never staple the cable-not even with circular staples. Impedance mismatching will occur.
- Never crush or pinch the cable.
  All of these will change the impedance of the cable and cause poor picture quality.

LENSES

1. Selection of Lens

<Auto Iris Lenses>

Specifications \ Models		WV-LA2.8` (Wide Angle)	WV-LA6A (Wide Angle)	WV-LA12A (Standard)	WV-LA18 (Telephoto)	WV-LA36 (Telephoto)
Image Size		1/2" (6.4 (H) x 4.8 (V) mm)				
Focal Length		2.8 mm	6 mm	12 mm	18 mm	36 mm
Maximum Aperture Ratio		1 : 1.4	1 : 1.4	1 : 1.4	1 : 1.4	1 : 1.8
Angular Field of View 1/3"	H	87.5°	43.5°	22.2°	15.5°	7.7°
	V	69.2°	32.9°	16.7°	11.5°	5.7°
Focusing Range		Adjusted by Camera			0.89 ft - ∞ (0.27 m - ∞)	3.3 ft - ∞ (1 m - ∞)
Mount		CS-mount, 1"-32UN				
Filter Size		None	M37.5 mm P = 0.5	M37.5 mm P = 0.5	M37.5 mm P = 0.5	M37.5 mm P = 0.5
Dimensions		ø1-11/16" x 1-1/4" (ø43 x 32 mm)	2-1/16"(W) x 1-11/16" (H) x 1-5/8"(D) [53(W) x 43(H) x 41.5(D) mm]	2-1/16"(W) x 1-11/16" (H) x 1-5/8"(D) [53(W) x 43(H) x 41.5(D) mm]	ø1-11/16" x 1-5/8" (ø43 x 41 mm)	ø1-11/16" x 1-5/8" (ø43 x 41 mm)
Weights		0.09 lbs. (40g)	0.10 lbs. (45g)	0.09 lbs. (40g)	0.15 lbs. (70g)	0.18 lbs. (80g)

- Dimensions and weights indicated are approximate.
- Specifications are subject to change without notice.

<Auto Iris Lenses>

Models / Specifications		WV-LZ81/6A (Motorized Zoom)	WV-LZ81/10 (Motorized Zoom)	WV-LA4R5C3A (Wide Angle)	WV-LA9C3A (Standard)	WV-LZ61/10 (Motorized Zoom)
Image Size		1/2" (6.4 (H) x 4.8 (V) mm)		1/3" (4.8 (H) x 3.6 (V) mm)		
Focal Length		8.5 - 51 mm (6X)	8 - 80 mm (10X)	4.5 mm	9 mm	6 - 60 mm (10X)
Maximum Aperture Ratio		1 : 1.2 (Wide) 1 : 1.3 (Tele)	1 : 1.4 (Wide) 1 : 1.7 (Tele)	1 : 1.2	1 : 1.2	1 : 1.6 (Wide) 1 : 2.6 (Tele)
Angular Field of View 1/3"	H	Wide : 31.4° Tele : 5.5°	Wide : 33.5° Tele : 3.5°	56.4°	29.6°	Wide : 43.7° Tele : 4.6°
	V	Wide : 23.5° Tele : 4.1°	Wide : 25.2° Tele : 2.6°	43.3°	22.2°	Wide : 33.0° Tele : 3.5°
Focusing Range		3.3 ft - ∞ (1m - ∞)	3.6 ft - ∞ (1.1m - ∞)	Adjusted by Camera		4.0 ft - ∞ (1.2m - ∞)
Mount		CS-mount, 1"-32UN				
Filter Size		M49 mm, P = 0.75	M55 mm, P = 0.75	None		M35.5 mm, P = 0.5
Dimensions		3-3/8"(W) x 2-7/16"(H) x 4"(D) [86(W) x 62(H) 102(D) mm]	3-3/16"(W) x 2-5/8"(H) x 4-5/8"(D) [81(W) x 66(H) 117.5(D) mm]	ø1-11/16" x 1-1/2" (ø43 x 38.5 mm)	ø1-11/16" x 1-1/2" (ø43 x 38.5 mm)	2-13/16"(W) x 2-1/16" (H) x 2-3/4"(D) [71(W) x 52(H) 70.5(D) mm]
Weights		0.93 lbs. (420g)	0.97 lbs. (440g)	0.09 lbs. (42g)	0.09 lbs. (40g)	0.46 lbs. (210g)

- Dimensions and weights indicated are approximate.
- Specifications are subject to change without notice.

<Auto Iris Lenses>

Specifications \ Models		WV-LA4510 (Wide Angle)	WV-LA608 (Wide Angle)	WV-LA1208 (Standard)	WV-LZ83/6 (Motorized Zoom)
Image Size		1/2" (6.4 (H) x 4.8 (V) mm)			
Focal Length		4.5 mm	6 mm	12 mm	8.5 - 51 mm (6X)
Maximum Aperture Ratio		1 : 1.0	1 : 0.75	1 : 0.8	1 : 0.8 (Wide) 1 : 1.0 (Tele)
Angular Field of View 1/3"	H	56.9°	43.8°	23.8°	Wide : 31.3° Tele : 5.5°
	V	43.6°	33.1°	17.6°	Wide : 23.4° Tele : 4.1°
Focusing Range		Adjusted by Camera			4.0 ft - ∞ (1.2m - ∞)
Mount		CS-mount, 1"-32UN			
Filter Size		None	M46 mm, P = 0.75	M46 mm, P = 0.75	M67 mm, P = 0.75
Dimensions		2-1/8"(W) x 1-11/16"(H) x 1-1/16"(D) [54.5(W) x 43(H) x 43 (D) mm]	2-1/2"(W) 2-1/16"(H) x 2-3/16"(D) [64(W) x 52(H) x 55 (D) mm]	2-7/8"(W) x 2-5/8"(H) x 2-7/8"(D) [73(W) x 66(H) x 72.5(D) mm]	3-1/2"(W) x 3"(H) x 4-13/16"(D) [90(W) x 77(H) 123(D) mm]
Weights		0.19 lbs. (85g)	0.34 lbs. (155g)	0.56 lbs. (255g)	1.63 lbs. (740g)

- **When using the above lenses with the camera, be sure to read instruction manual of lenses.**
- Dimensions and weights indicated are approximate.
- Specifications are subject to change without notice..

<Auto Iris Lenses>

Specifications \ Models		WV-LA210C3 (Wide angle)	WV-LA408C3 (Wide angle)	WV-LA908C3 (Standard)
Image Size		1/3" (4.8(H) x 3.6(V) mm)		
Focal Length		2.1 mm	4.5 mm	9 mm
Maximum Aperture Ratio		1 : 1.0	1 : 0.75	1 : 0.75
Angular Field of View	H	107.6°	57.2°	31.3°
	V	88.0°	43.7°	23.5°
Focusing Range		Adjusted by Camera		
Mount		CS-mount, 1"-32UN		
Filter Size		None	M40.5 mm, P=0.5	M40.5 mm, P=0.5
Dimensions		2-7/16"(W) x 2-1/16"(H) x 1-5/8"(D) [62.5(W) x 52(H) x 41(D) mm]	2-7/16"(W) x 2-1/16"(H) x 2-1/4"(D) [62.5(W) x 52(H) x 57.5(D) mm]	2-7/16"(W) x 2-1/16"(H) x 2-1/4"(D) [62.5(W) x 52(H) x 57.5(D) mm]
Weight		0.24 lbs. (110g)	0.31 lbs. (140g)	0.30 lbs. (135g)

- **When using the above lenses with the camera, be sure to read instruction manual of lenses.**
- Dimensions and weights indicated are approximate.
- Specifications are subject to change without notice.

<Manual and Fixed Iris Lenses>

Models / Specifications		WV-LM4R5A (Wide Angle)	WV-LF6 (Wide Angle)	WV-LF12 (Standard)	WV-LF4R5C3A (Wide Angle)	WV-LF9C3A (Standard)
Image Size		1/2" (6.4 (H) x 4.8 (V) mm)			1/3" (4.8 (H) x 3.6 (V) mm)	
Focal Length		4.5 mm	6 mm	12 mm	4.5 mm	9 mm
Maximum Aperture Ratio		1 : 1.4	1 : 1.4	1 : 1.4	1 : 1.2	1 : 1.2
Angular Field of View 1/3"	H	56.9°	43.5°	22.2°	56.4°	29.6°
	V	43.6°	32.9°	16.7°	43.3°	22.2°
Iris		Manual	Fixed	Fixed	Fixed	Fixed
Focusing Range		Adjusted by Camera				
Mount		CS-mount, 1"-32UN				
Filter Size		M37.5 mm, P = 0.5	M34 mm, P = 0.5	M34 mm, P = 0.5	M30.5 mm, P = 0.5	M30.5 mm, P = 0.5
Dimensions		ø1-3/4" x 1-5/8" (ø44 x 41 mm)	ø1-1/2" x 1-5/8" (ø38 x 41 mm)	ø1-1/2" x 1-5/8" (ø38 x 41 mm)	ø1-3/8" x 1-7/16" (ø34.4 x 36 mm)	ø1-3/8" x 1-7/16" (ø34.4 x 36 mm)
Weights		0.20 lbs. (93g)	0.08 lbs. (38g)	0.07 lbs. (33g)	0.06 lbs. (29g)	0.05 lbs. (23g)

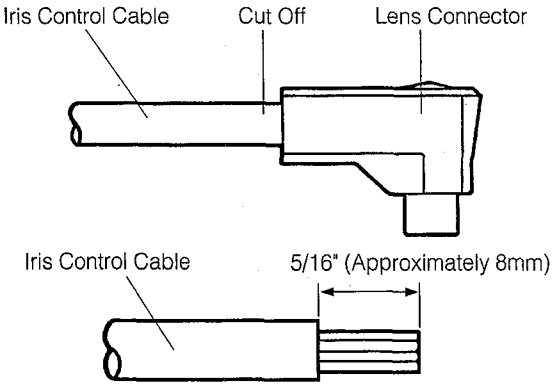
- Dimensions and weights indicated are approximate.
- Specifications are subject to change without notice.

2. Installation of Auto Iris Lens Connector

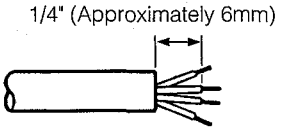
When you use an auto iris lens other than listed on pages 12, 13, 14 and 15, for example a video servo ALC lens, install the lens connector (YFE4191J100) coming with the camera as follows.

The following installation should be made by qualified service personnel ro system installers.

(1) Cut off the iris control cable at the edge of lens connector and then cut off the outer cable cover as shown in the diagram.



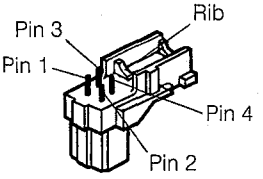
(2) Cut off the inner cable covers of the iris control cable as shown in the diagram.



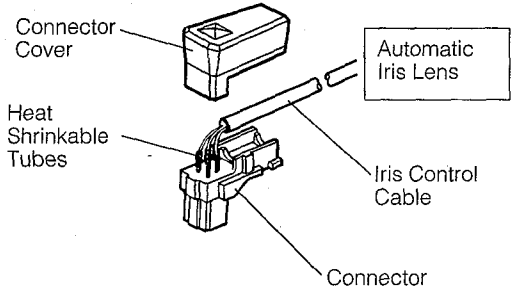
(3) Put the heat shrinkable tubes or equivalent tubes on the inner cables of the iris control cable.

(4) Solder the inner cables of the iris control cable at the pin-plug block accoaridng to the following pin assignment and cover the heat shrinkable tubes or equivalent tubes over the soldered area and heat on the tubes to shrink them.

Pin 1: Power source; +9V DC, 50mA Max.
Pin 2: Not used
Pin 3: Video signal; 1.3 Vp-p/40 kohms
Pin 4: Shield, ground
(Set the Lens Selection Switch (14) to the VIDEO position)



(5) Both the connector cover and connector should be positioned to interlock.



Note:

Cut off the rib on the connector, when the iris control cable is too thick and the connector cover and connector can not be interlocked.

3. Mounting the Lens

Caution:

Always set the Flange-back adjusting ring to fully clockwise (C-mount side) by loosing one screw on the ring before mounting the lens, otherwise the inner glass and CCD image sensor could be damaged by the lens.

(1) Mount the lens by turning it clockwise onto the lens mount of the camera.

(2) Connect the lens cable to the Auto Iris Lens Connector on the camera when an auto iris lens is used.

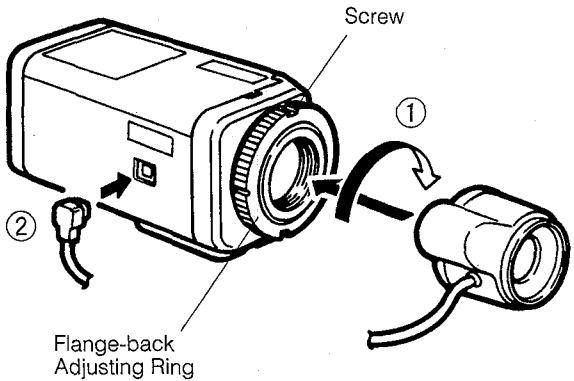
(3) Set the Lens Selection Switch (14) to the proper position as follows.

DC: The mounted lens is one of the lenses listed on pages 12, 13, 14 and 15 or one that requires the DC control signal for auto iris control.

VIDEO: The mounted lens requires video signal for auto iris control.

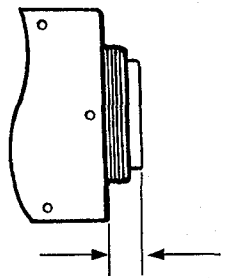
NOTE:

Refer to item-14 on page 6 for the lens selection switch.



When you use the lens other than those listed on pages 12, 13, 14 and 15, lens mount should be C-mount or special C-mount (CS-mount (1"-32UN)) and lens weight should be less than 0.99 lbs. (450g). If not, both the lens and camera should be secured.

The protrusion of the rear of the lens should be as shown below.

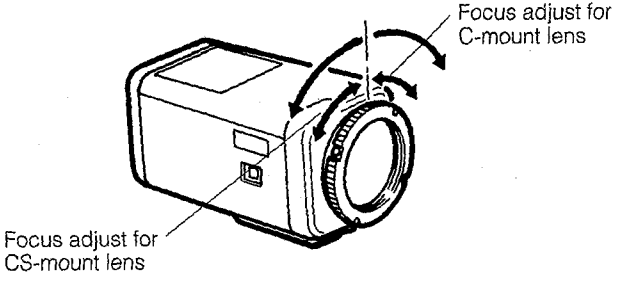


C-mount: Less than 7/16" (11.5 mm)
CS-mount: Less than 1/4" (7.2 mm)

FOCUS OR FLANGE-BACK ADJUSTMENT

The following adjustment should be made by qualified service personnel or system installers.

1. Loosen screws on the flange-back adjusting ring.



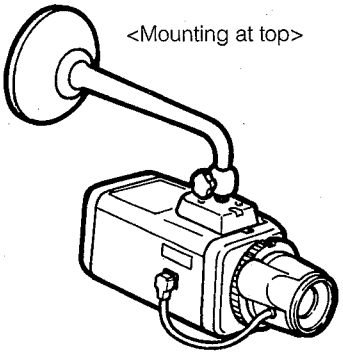
2. Turn the flange-back adjusting ring to the desired position.
   Caution:
   Do not turn this ring too much to counterclockwise as this could damage the inner glass and CCD image sensor.
3. Tighten the screws on the flange-back adjusting ring.

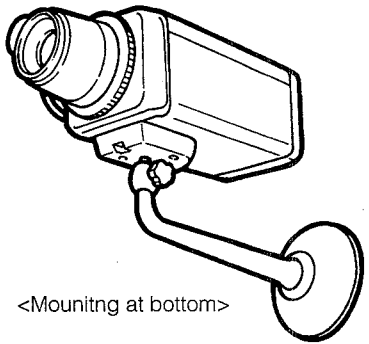
INSTALLATION OF CAMERA

- **Mounting from the bottom**
  This camera is designed to be mounted from the bottom, as shown below. The mounting hole is a standard photographic pan-head screw size (1/4" - 20).

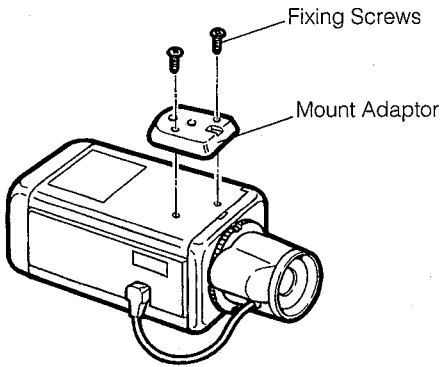
- **Mounting from the top**
  Remove the mount adaptor from the bottom of the camera by removing the two fixing screws. Attach the mount adaptor to the top as shown in the diagram, then mount the camera on the mounting bracket.
  Make sure that the two original fixing screws are used when mounting the mount adaptor as longer length screws may damage inner components.

<Mounting at top>





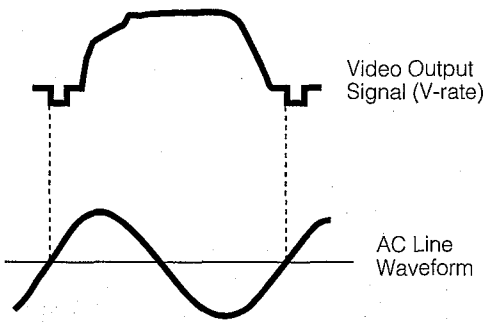
<Mounitng at bottom>



LINE-LOCK PHASE ADJUSTMENT

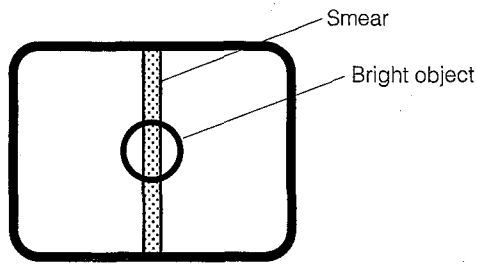
The vertical phase of the camera video signal can be matched to the phase of AC line.
Observe the video output signal (V-rate) of the camera and the AC line waveform by using a dual-trace oscilloscope and adjust the Line-lock Phase Control (5) to line up the phase of both signals.

Caution : This adjustment must be made by qualified service or system installers.



PREVENTION OF BLOOMING AND SMEAR

When the camera is aimed at a bright light, such as a spot light, or a surface that reflects bright light, smear or blooming may appear. Therefore, the camera should be operated carefully in the vicinity of extremely bright objects to avoid smear or blooming.



LENS MAINTENANCE AND CLEANING

1. Remove the lens connector.
2. Remove the lens, and inspect the camera CCD faceplate through the lens mount opening to assure that the faceplate is free of smudges or particles of dirt.
3. Clean the CCD faceplate, if necessary, using lens tissue or a cotton tipped applicator and ethanol.
4. Install the new lens.

SPECIFICATIONS

Pick-up Device:	752 (H) x 582 (V) pixels, Interline Transfer CCD
Scanning Area:	4.9 (H) x 3.7 (V) mm (Equivalent to scanning area of 1/3" pick-up tube)
Synchronization:	Internal, Line-locked or Multiplexed Vertical Drive (VD2) Selectable
Scanning System:	2 : 1 interlace
Scanning:	625 lines / 50 fields / 25 frames
Horizontal:	15.625 KHz
Vertical:	50.00 Hz
Horizontal Resolution:	480 lines
Video Output:	1.0 Vp-p PAL composite 75 ohms / BNC connector
Signal-to-Noise Ratio:	50 dB (AGC OFF, weight ON)
Electronic Light Control:	Equivalent to continuous variable shutter speed between 1/50 sec. and 1/15,600 sec.
Minimum Illumination:	0.09 footcandle (0.9 lux) at F0.75 [Equivalent to 0.2 footcandle (2 lux) at F1.2 or 0.3 footcandle (3 lux) at F1.4]
Gain Control:	Selectable AGC ON (+14 dB) or OFF
White Balance:	Selectable ATW ON or OFF (AWC)
Detail:	Selectable SHARP or SOFT
Lens Mount:	Selectable C-mount or CS-mount
ALC Lens:	Selectable DC or Video
BLC :	Selectable Normal or Black Light Control
Ambient Operating Temperature:	14°F - 122°F (-10°C -+50°C)
Ambient Operating Humidity:	Less than 90%
Power Source:	WV-CP410: 220 - 240V AC 50 Hz WV-CP412: 12V DC Selectable DC12V or Video WV-CP414: 24V AC 50 Hz

Power consumption:	WV-CP410:	4.7W
	WV-CP412:	0.3A
	WV-CP414:	3.5W
Dimensions (without lens):	2-5/8" (W) x 2-3/16" (H) x 4-3/16" (D)	
	[67 (W) x 55 (H) x 123 (D) mm]	
Weights (without lens):	WV-CP410:	1.4 lbs. (640g)
	WV-CP412:	1.0 lbs. (460g)
	WV-CP414:	1.1 lbs. (480g)

Weights and dimensions indicated are approximate.
Specifications are subject to change without notice.

STANDARD ACCESSORY

Body Cap .....1 pc.

OPTIONAL ACCESSORIES

Lenses : WV-LA2.8, WV-LA6A, WV-LA12A, WV-LA18, WV-LA36, WV-LA4510, WV-LA608, WV-LA1208, WV-LA4R5C3A, WV-LA9C3A, WV-LA210C3, WV-LA408C3, WV-LA908C3, WV-LZ81/6A, WV-LZ81/10, WV-LZ83/6, WV-LZ61/10, WV-LM4R5A, WV-LF6, WV-LF12, WV-LF4R5C3A, WV-LF9C3A